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# Advanced Thermal technologies for Space Science Missions at JPL

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PRESENTATION OUTLINE:

Future Space Science Missions at JPL
- Mars Missions
- Missions to Other Planets
- Missions to Comets
- Sample Return Missions
- Microspacecraft Missions

Advanced Thermal technologies needed for future missions
- Temperature Control Applications
- Minimizing heat losses to conserve power
- Precision temperature maintenance of large structures
- New universal thermal architecture for future missions
- Microspacecraft thermal technologies
- MEMS based thermal technologies for Micro/Nano sciencecraft

Miniature loop heat pipe technology
Mechanically pumped cooling loop technologies
Electrochromic devices for variable heat rejection
Lightweight thermal switches for microspacecraft applications
Lightweight thermal insulation for deep space and planetary environment
MEMS based thermal control technologies

Conclusions